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- 1. A method of scheduling tasks comprising:

 creating a list of activities required to accomplish the tasks;

 modifying selected activities into sets of smaller activities; and
 scheduling the activities and smaller activities based on discrete and continuous
 constraints.
- 10 2. The method of claim 1 wherein modifying selected activities is performed as a function of integrated implications of the discrete and continuous constraints.
 - 3. The method of claim 1 wherein modifying selected activities comprises determining if an activity is larger than a predetermined threshold.

4. The method of claim 1 wherein modifying selected activities comprises determining if an activity occurs slower than a predetermined threshold.

- 5. The method of claim 1 and further comprising defining discrete and continuous constraints related to the activities based on requirements of the tasks.
- 6. The method of claim 5 wherein activities are assigned start and end times.
- 7. The method of claim 5 wherein activities are scheduled based on deadlines.
- 8. The method of claim 5 wherein the requirements of the task comprise identification of resources required to perform the task.
- 9. The method of claim 8 wherein activities are assigned resources based on a resource balancing heuristic.

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- 10. The method of claim 1 and further comprising identifying infeasibilities during the scheduling of activities.
- 11. The method of claim 10 and further comprising identifying a culprit activity when an infeasibility is identified.
 - 12. The method of claim 1 and further comprising chronological backtracking to the culprit activity which resulted in an infeasibility.
- 13. The method of claim 1 and further comprising identifying suboptimalities during the scheduling of activities and identifying culprit activities causing the suboptimalities.
 - 14. A method of scheduling activities comprising:

 defining discrete and continuous constraints related to the activities;
 representing selected scheduling decisions as discrete and continuous constraints;

scheduling activities in accordance with an integrated implications of the discrete and continuous constraints.

- The method of claim 14 and further comprising:
 scheduling activities in accordance with previous scheduling decision constraints;
 identifying infeasibilities during the scheduling of activities; and .
 scheduling activities in accordance with identified infeasibilities.
- 25 16. The method of claim 15 and further comprising:
 identifying a culprit activity which resulted in an infeasibility.
 backtracking to the culprit and rescheduling the culprit activity.
 - 17. The method of claim 16 and further comprising identifying a culprit activity which resulted in a suboptimality.

22. A method of analyzing integrated implications of discrete and continuous constraints comprising: assigning discrete variables; generating constraints based on legal combinations of discrete-valued variables; 5 checking consistency of discrete variable assignments; propagating discrete variable assignments based on discrete constraints; identifying culprit based on inconsistent discrete variable assignments; assigning continuous variables; generating constraints based on mathematical relations between continuousvalued variables; 10 propagating continuous constraints; checking for consistency of continuous constraints; identifying culprit activities which are inconsistent with continuous constraints; assigning continuous variables to consistent continuous constraints; assigning decision variables 15 associating decision variable assignments with discrete variable assignments and constraints; associating decision variable assignments with continuous variable constraints; associating discrete variable assignments with continuous variable constraints; 20 and identifying culprit activities based on association of decision variable assignments with continuous variable constraints, discrete variable assignments, and discrete variable constraints.

- 23. A machine readable medium have instructions stored thereon for causing a computer to perform the method of claim 22.
 - 24. The method of claim 22 and further comprising:
 incrementally adding and deleting continuous constraints;
 incrementally adding and deleting discrete variable assignments and constraints;
 maintaining global consistency between discrete and continuous constraints; and

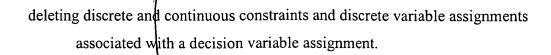
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- 25. The method of plaim 24 and further comprising using linear mathematical relationships in continuous constraints.
- 26. The method of claim 24 and further comprising assigning continuous variables using an optimization of an objective function.

10 27. A machine readable medium have computer executable instruction stored thereon for causing a computer to perform a method of scheduling tasks comprising: creating a list of activities required to accomplish the tasks; modifying selected activities into sets of smaller activities; and scheduling the activities and smaller activities based on discrete and continuous 15 Ú

constraints.

28. A machine readable medium have computer executable instruction stored thereon for causing a computer to perform a method of scheduling activities comprising: defining discrete and continuous constraints related to the activities; representing selected scheduling decisions as discrete and continuous constraints;

and

- scheduling activities in accordance with an integrated implications of the discrete and continuous constraints
- 29. A machine readable medium have computer executable instruction stored thereon 25 for causing a computer to perform a method of modifying scheduled tasks comprising:

updating information related to the scheduled tasks;

modifying a list of activities required to accomplish the tasks based on the

updated information; 30

optionally modifying the activities into sets of smaller activities;

modifying discrete constraints related to the activities;
modifying continuous constraints related to the activities; and
scheduling the activities and smaller activities based on discrete and continuous
constraints.

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30. A machine readable medium have computer executable instruction stored thereon for causing a computer to perform a method of handling discrete constraints comprising:

assigning discrete variables;

generating constraints based on legal combinations of discrete-valued variables; checking consistency of discrete variable assignments; propagating discrete variable assignments based on discrete constraints; and

identifying culprit based on inconsistent discrete variable assignments.

A machine readable medium have computer executable instruction stored thereon for causing a computer to perform a method of handling continuous constraints comprising:

assigning continuous variables;

generating constraints based on mathematical relations between continuous-

valued variables;

propagating continuous constraints;

checking for consistency of continuous constraints;

identifying culprit activities which are inconsistent with continuous constraints;

and

assigning continuous variables to consistent continuous constraints

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- 32. A system for scheduling tasks comprising:
 - a continuous constraint solver engine;

a discrete constraint solver engine; and

means for integrating the engines to schedule activities to accomplish the tasks taking into account both continuous constraints and discrete constraints.

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- 33. A system for scheduling tasks comprising:

 means for creating a list of activities required to accomplish the tasks;

 means for modifying the activities into sets of smaller activities; and

 means for scheduling the activities and smaller activities based on discrete and

 continuous constraints.
- 34. A system for scheduling tasks comprising:
 a constraint module that defines discrete and continuous constraints related to the activities;

a module that represents scheduling decisions as discrete and continuous constraints; and

a scheduling module that schedules activities in accordance with an integrated implications of the discrete and continuous constraints.